

THE STRUCTURE AND GLOBAL PROPERTIES OF RED GIANT CLUMP STARS

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We propose to conduct a targeted study by using Kepler to measure the pulsation properties of 128 red clump stars over the one year period of cycle 2. Since the program stars were selected from the Kepler drop list, they are known to be highly variable. Stars in the red clump are the metal-rich counterparts to the horizontal branch stars. Using the tools of asteroseismology and Kepler light curves, the masses, radii, temperatures, and ages of these stars will be determined. Several interior giant star properties will also be measured. These include: composition gradients, core sizes, and the convective overshoot parameter. A secondary goal is to use Kepler light curves to quantify the pulsation lifetimes. Giant star oscillations are expected to be stochastically excited and then damped, but the damping time frame is disputed. Suggestions range from a few days to several weeks, but it could be much longer.